O. H. M. S.

W. J. Gerald

Deputy Minister.

LABORATORY

OF THE

INLAND REVENUE DEPARTMENT

OTTAWA, CANADA

BULLETIN No. 169

CIDER

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CIDER

OTTAWA, December 18, 1908.

W. J. GERALD, Esq.,
Deputy Minister of Inland Revenue.

SIR,—I beg to hand you a report upon 62 samples purchased as cider, in July and August of the present year. The samples represent this article as sold throughout Canada, with exception of the London district, in which no collection was made.

"Cider is a beverage produced by the fermentation of the juice of apples." (Thorpe's Dictionary of App. Chemistry, Vol. I, p. 560).

The following definition for cider is contained in a draft bill for a Uniform Food Law proposed for the United States. (Am. Food Journal, Dec., 1908):—"Cider, hard "cider, is the product made by the normal alcoholic fermentation of apple juice, and the "usual cellar treatment, and contains not more than seven (7) per cent. by volume of "alcohol* and, in one hundred (100) cubic centimeters (20°C.), of the cider, not less "than two (2) grams nor more than twelve (12) grams of solids, not more than eight "(8) grams of sugars, in terms of reducing sugars, and not less than twenty (20) centi-"grams nor more than forty (40) centigrams of cider ash.

"Sparkling cider, champagne cider, is cider in which the after-part of the fermen-"tation is completed in closed containers, with or without the addition of cider or "sugar liquor, and contains, in one hundred (100) cubic centimeters (20°C.), not less "than twenty (20) centigrams of cider ash."

It is evident that in order to the intelligent interpretation of the results of analysis of cider, we must study the normal juice of apples.

The subject was first undertaken by this Department in 1904; and in Bulletin No. 94 of that year, will be found the results of examination of 41 samples of commercial cider. In his prefatory remarks, the late Chief Analyst mentions having examined 5 samples of fresh apple juice, obtained at Lambeth, Ont. The specific gravity ranged from 1·0464 to 1·0485 corresponding to 11·37 and 11·88 per cent of dissolved solids.*

Two additional samples examined in 1903, gave gravities of 1·0546 and 1·0573, corresponding to 13·38 and 14·04 per cent of solids in solution. It is quite to be ex-

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* Equivalent to 12·30 per cent of proof spirit, or 5·62 per cent of alcohol by weight.

* The solids are calculated from the specific gravity of the non-alcoholic juice by the following formula:—Solids=245 (S—1) where "S" is the specific gravity. (C. A. Browne, Jour. Am. Ch. Soc., 1901, p. 275).

pected that different varieties of apples should yi[illegible] juice of different character. In this connection the following results are of interest. They are quoted from Bulletin 88 of the Bureau of Chemistry, Washington (published in 1904).

APPLE JUICE.‡

—	Sp. Grav.	Solids.	Sugars.	Acidity.
Mean of 10 summer varieties	1·049	12·33	9·53	0·33
" 13 autumn "	1·054	13·76	10·66	0·36
" 19 winter "	1·056	14·29	11·43	0·41

C. A. Brown (Jour. Am. Chem. Soc., 1901, 871) gives the following composition of apple juices :—

	Sp. Grav.	Solids	Sugar	Acidity
Summer apples (5 analyses.	1·050	12·29	9·99	0·72
Winter apples (4 analyses).	1·057	13·96	11·97	0·43

"Second pressings," made by wetting apple pomace with water, and repressing, gave results as below :—

Sp. Grav.	Solids	Sugar
1·038	9·14	8·36

The volume of liquid obtained in this second pressing is not given, but it is evident that a considerable amount of soluble matter, chiefly sugars, remains in the pomace.

H. C. Gore in Bulletin 118 (1908) of the Bureau of Chemistry, Washington, gives the following results on apple juices :—

Variety of Apple.	Sp. Grav.	Solids.	Sugar.	Acidity.
Yellow Newtown	1·0504	12·35	11·58	0·53
Ralls	1·0564	12·82	12·14	0·46
Ben Davis	1·0492	12·05	10·05	0·48
[illegible]sap	1·0475	11·64	10·02	0·46
[illegible]	1·0638	15·63	13·95	0·13
[illegible]rn Spy	1·0608	14·90	12·82	0·61
[illegible]win	1·0584	14·31	12·22	0·63
[illegible]overy	1·0588	16·86	13·81	0·70
Shockley	1·0457	11·20	10·01	0·29
Gilpin	1·0547	13·41	11·50	0·38
Kentucky Red	1·0608	14·90	12·66	0·72

From these studies it appears that true apple juice may vary as follows :—

Specific gravity	from	1·0457	to	1·0688
Dissolved solids	"	11·20	"	16·86 p.c.
Sugars	"	9·53	"	13·95 "
Acidity	"	0·13	"	0·72 "

Gore records experiments in the sterilization of apple juice. Perfect success was not obtained by heating to 65° C. (= 149° F) although the acid varieties showed fair keeping quality. Sterilized at 65° to 70° C. (= 149° F. to 158° F.) the juice kept perfectly in wooden containers for six months.

‡ The acidity is stated in terms of sulphuric acid ; and the solids are obtained by actual drying. The formula just quoted will give 12·01, 13·28 and 13·72.

The following specifications for apple juice, apple must or sweet cider are included in a draft bill for a Uniform Food Law proposed for the United States. (Am. Food Journal, Dec., 1908):—

"Apple juice, apple must, sweet cider, is the fresh fruit juice obtained from apples, "the fruit of Pirus malus, has a specific gravity (20° C.) not less than 1·0415 nor "greater than 1·0690; and contains in one hundred (100) cubic centimeters (20° C.) "not less than six (6) grams, and not more that twenty (20) grams of total sugars, in "terms of reducing sugars, not less than twenty-four (24) centigrams nor more than "sixty (60) centigrams of apple ash, which contains not less than fifty (50) per cent. of "potassium carbonate."

The following summary of results on the sterilization of apple juice are so important, that I think it well to reproduce them from Bulletin 118 of the Bureau of Chemistry, p. 22:

SUMMARY.

"(1) The experiments described show conclusively that it is possible to sterilize apple juice in wooden containers, the product remaining sound for at least six months under actual observation. The precautions which must be taken to insure this are as follows: First paraffin the containers on the outside, then sterilize, and fill with juices heated to between 149° and 158° F. (65° to 70° C.); seal, taking measures to relieve the vacuum produced by the contraction of the juice on cooling by filtering the air through cotton. Twenty-four 10-gallon kegs successfully stood a severe shipping test, showing no loss due to fermentation of the juice. The juice so prepared, was found to be palatable, and acceptable as a summer drink.

(2) It is demonstrated that apple juice can be successfully sterilized in tin containers, using the type of tin can sealed by the mechanical process, excluding all metals from contact with the juice except the tin of the can. Where lacquered cans are used the contamination with tin was reduced about one-half. Apple juices were canned and sterilized by heating in a hot water bath, up to the temperature of 149° F. (65° C.) for a half hour, and then were allowed to cool. These juices possessed only a slight cooked taste due to the heating and retained much of their distinctive apple flavour. It was found that from finely flavoured apple juice a first-class sterile product could be made, while a poorly flavoured apple juice yielded an inferior product. The process conditions mentioned were not quite thorough enough to sterilize all of the varieties canned. A slight increase in the temperature or time of processing, or both, should be made, the temperature not to exceed 70° C. (158° F.) in any case.

(3) The best treatment for sterilizing in glass was found to consist in heating for one hour at 149° F. or or for one-half hour at 158° F. Heating for one hour at 158° did not produce marked deterioration in flavour, a half hour being allowed in all cases for the juice to obtain the temperature of the water bath.

(4) It was shown that the great bulk of the insoluble material naturally contained in apple juice can be removed by means of a milk separator.

(5) It is possible to carbonate the juice slightly before canning or bottling, thus adding a sparkle to the product. A flavour foreign to fresh apple juice is also added, however, and uncarbonated sterile juice will resemble fresh apple juice more closely. Carbonating by the addition of water charged with carbon dioxide was considered by some to injure the flavour, lessening the characteristic fruit flavour by dilution. In the opinion of others a heavy, rich juice was improved both by the charge of carbon dioxide and by the consequent dilution. Experiments indicated that the danger of contamination by mold growths was lessened by maintaining an atmosphere of carbon dioxide above the surface of the juice after opening.

(6) It is demonstrated that benzoate of soda in quantities varying from 0·03 to 0·15 per cent. (0·1 per cent. being the maximum temporarily permitted by the food regulations) while it checks the alcoholic fermentation, allows other organisms to develop (notably the acetic acid ferment), whereby the palatability of the product as a beverage is destroyed."

Apple juice, like other fruit juices, may undergo the alcoholic fermentation, the dissolved sugar producing approximately half its weight of alcohol. The fermented

cider (*apfel wein* of Germany) bears the same relation to apple juice, which wine bears to the juice of the grape. This fermented cider, sometimes known as "hard cider," is often an unattractive beverage, owing to the great number of differing fermentations which occur in it. When, however, a selected and desirable yeast is used to induce a dominant fermentation, the product may be a very desirable drink. This phase of the question has been carefully studied by Alwood, Davidson and Moncure, of the Department of Agriculture of the United States, and the results of their investigations are published in Bulletin 88 of the Bureau of Chemistry.

When the fermentation is incomplete, the product is known as champagne cider and the authors named find that unless preservatives are used, it is difficult to bottle and hold a liquid containing much above 1·5 or 2 per cent. of sugar. (U.S. Bulletin 98, p. 42).

The following results of analysis of Fermented Cider, prepared under expert supervision, are interesting and important. (U. S. Bull. 88, p. 41.)

—	Specific Gravity.	Total. Solids	Sugar.	Acidity.	Alcohol.	
					Weight.	Proof Spirit.
.....	1·004	2·60	0·96	0·35	4·43	9·72
.....	1·003	2·24	0·20	0·48	5·20	11·35
.....	0·999	1·79	trace	0·33	5·66	12·40
.....	1·004	2·48	0·64	0·43	5·28	11·59
.....	1·003	2·64	0·90	0·39	6·00	13·11
.....	0·999	1·69	trace	0·37	6·36	14·88
.....	0·998	1·73	"	0·37	6·20	13·56
.....	1·003	1·76	"	0·34	5·37	11·76
.....	1·011	3·84	2·11	0·54	4·23	9·30
.....	1·001	1·83	0·35	0·35	5·16	11·35
.....	1·005	2·30	0·75	0·72	4·76	10·40
.....	1·001	1·98	0·35	0·39	5·37	11·76
.....	1·000	1·59	trace	0·35	5·00	10·94
.....	1·003	2·17	0·38	0·41	4·66	10·24
.....	1·001	1·53	0·27	0·40	5·09	11·16
.....	1·005	2·73	1·41	0·38	5·48	11·99
Average	1·002	2·21	0·52	0·39	5·26	11·50

Few fermented fruit juices possess distinctive names in English. The fermented juice of the grape is known as *Wine*, and in the cases of other fruits, it is usual to speak of the fermented juice as a special kind of wine. Thus we have currant wine, sherry wine, gooseberry wine, elderberry wine, &c. The fermented juices of the apple and the pear are exceptional inasmuch as they possess, distinctive names, Cider and Perry, respectively. The fact is of course due to the extensive use of these beverages in English speaking countries. "France is easily the leading cider country of the world, followed by Germany, England, Switzerland, the United States, Canada, Austria, Grand Duchy of Luxembourg and Spain, in order of importance..... The production of cider in France, in 1900, exceeded 647,000,000 gallons..... No definite statistics are available as to the production of cider in England, but the Hon. C. W, Radcliffe Cooke, in a recent article in the Nineteenth Century, draws the conclusion that the total annual product is not less than 100,000,000 gallons, having a maximum value of nearly $15,000,000?", W. B. Alwood, Bull. 71, (1903) Bureau of Chemistry, Washington.

The manufacture of cider has not received the attention which it deserves; and this is especially true of Canada. The apple crop of Canada is stated as 18,626,186 bushels, for 1901. (Can. Year Book, 1907). It is capable of great increase; and the manufacture of cider, under proper conditions, may become a great industry in Canada. That the world's market for cider is not fully supplied appears from the fact that dried apples, cores and parings are regularly shipped from United States to France, to be used

in the manufacture of a low quality of cider, in spite of the fact that France is itself the largest apple producing country of the world.

As in every other department of production for foreign markets, it is necessary that intelligence and skill should guide the hand of industry. Really excellent cider cannot be made from refuse apples, treated in the haphazard fashion to be seen on too many fruit farms in Canada. This is not the place to describe cider manufacture; but I shall take the opportunity of referring anyone interested to Bulletins (Nos. 71, 88 and 118) of the Bureau of Chemistry, Washington, D. C.

Fifteen samples reported in this collection contain alcohol in amount less than two and a half (2½) per cent. of proof spirit, and are therefore to be regarded as temperance beverages. (Legal standard for the province of Ontario). These samples are the following:—

Number	Sold as	Made by	Proof Spirit.	Total Solids.	—
			p. c.	p. c.	
31304	Cider	No manuf's label on the bottle.	2·48	6·66	Salicylic acid, dyed.
26476	Cidre champagne	Els. Fortier & Cie, Quebec	None	16·95	
26499	Apple juice (Duffy's)	Am. Fruit Prod. Co., Rochester	"	12·59	
163	Cidre de pommes	Nap. Berard, Sorel	"	6·78	Artifical flavour.
32621	Apple nectar	Chas. Gurd & Co., Montreal	"	9·82	
32623	Champagne cider	R. Millar, Montreal	"	4·14	
32624	Apple nectar	Rowan Bros. & Co., Montreal	"	7·25	
32625	Champagne cider	Allens, Montreal	"	5·66	
35269	Cider		"	2·37	
35153	"		"	6·67	
33178	Fruit champagne, orange flavour.	Blackwoods, Ltd., Winnipeg	0·98	8·40	Salicylic acid, dyed.
33181	Orange cider	E. L. Drewry, Winnipeg	None	15·24	" "
34956	Boiled cider	Brady Houston Co., Victoria	0·81	48·16	
34963	"	" "	0·81	48·90	
34967	"	" "	1·16	48·63	

It is quite apparent that none of these articles answer to the definition of cider; nor should they be sold under that name. None of them are made by the "normal alcoholic fermentation of apple juice" They are correctly sold as "soft drinks," non-alcoholic or temperance drinks, or by any truly descriptive name which does not imply that they are cider. This name should be carefully protected, and correctly applied, according to the usage of the great cider-making countries of the world. Eleven of these samples are distinctly sold as cider, a fact which implies either that a real cider industry does not exist in Canada, or that no one is looking after its interests. Most of these beverages are artificial, being made from sugar, water, flavouring esters and colouring matters. No, 26499 (Duffy's Apple Juice) is the only one which bears evidence of being a bona fide apple product and true to name. Nos. 34956, 34963 and 34967 constitute a class by themselves, and cannot be regarded as cider proper, nor even as normal apple juice.

The subjoined table contains the more important analytical numbers found for the remaining samples (45 samples) of this collection. The last column is an attempt to calculate the original solids of the apple juice: and assumes that the alcohol found in the cider represents twice its weight of sugars in the juice. This hypothesis may be at fault in several ways, as by loss of alcohol through evaporation, or conversion into acetic acid, &c.: but doubtless possesses a considerable interpretative value.

Number.	Proof Spirit.	Solids.	Ash.	Original Solids of Juice.	—
	p. c.	p. c.	p. c.	p. c.	
33526.	6·84	8·72	0·15	14·96	
33527.	7·23	8·28	0·11	14·36	
33528.	7·36	8·18	0·27	14·86	
33529.	3·85	7·54	0·02	11·04	
33530.	9·86	2·08	0·22	11·08	
31301.	5·49	1·57	0·16	6·57	
31302.	7·57	1·49	0·19	8·67	
31303.	6·38	8·94	0·07	14·94	
31305.	3·03	14·39	0·00	17·17	Sold as orange cider; no label; contains salicylic acid.
29733.	5·86	9·85	0·13	15·19	
29734.	11·21	3·80	0·30	14·04	
29735.	6·47	6·10	0·14	11·96	
29736.	6·34	8·57	0·16	14·25	
29737.	6·22	7·37	0·26	13·03	Contains salicylic acid.
26492.	9·73	4·92	0·32	13·80	Benzoic ester.
26500.	9·86	6·63	0·24	15·63	
34401.	10·54	2·86	0·20	12·48	Contains salicylic acid.
160.	10·26	6·96	0·25	16·34	" acetic ester.
161.	10·67	4·55	0·16	14·29	
162.	9·72	6·96	0·28	15·84	Sweet apple cider.
32022.	3·04	2·60	0·11	10·98	
22653.	6·58	8·33	0·18	14·33	
22654.	6·10	4·28	0·27	9·84	Contains benzoic esters.
35265.	7·10	4·24	0·17	10·72	Salicylic acid.
35266.	10·40	6·83	0·37	16·33	
35267.	10·81	4·92	0·33	14·80	
35268.	10·81	2·86	0·20	1[illegible]·74	
35149.	11·49	5·51	0·23	16·01	
35150.	9·04	4·95	0·20	13·97	Trace of salicylic acid.
35151.	11·08	5·73	0·26	15·85	
35152.	3·03	6·22	0·03	8·96	Contains salicylic acid.
34587.	4·40	8·70	0·13	12·79	
33177.	9·58	6·54	0·20	15·28	
33180.	10·54	5·34	0·28	14·96	
35311.	11·76	2·18	0·15	12·92	
35312.	8·33	3·31	0·19	10·95	" "
35314.	9·45	6·63	0·13	15·25	
35315.	9·04	1·35	0·19	9·59	
34305.	3·58	6·63	0·08	9·87	
34306.	11·76	4·8[illegible]	0·22	[illegible]·56	
34307.	3·58	10·46	0·06	[illegible]·[illegible]	
34308.	10·13	4·65	0·16	[illegible]·[illegible]	
34309.	3·71	5·02	0·05	[illegible]·[illegible]	Salicylic acid.
34971.	7·10	15·57	0·16	[illegible]·[illegible]	
34973.	5·98	13·64	0·16	19·08	
Standard maxima and minima.	12·30 ?	12·00 [illegible]·00	0·49 [illegible]·20		

It has been already shown that the solids in apple juice, may vary from 11·20 to 16·86 per cent. Say from 11 to 17 per cent. Much suspicion must therefore attach to the following numbers, viz.: 31301, 31302, 22654, 35152, 35315, 34305 and 34309, on account of the low solids: and to 34971 and 34973, on account of the large amount of dissolved solid matters.

So much work has yet to be done upon cider before a definite pronouncement can be made as to its specific character and the extent of its variations that I consider it best to leave the matter of final judgment in abeyance for the present; and beg to recommend that this report be published as Bulletin No. 169.

I have the honour to be, Sir,
Your obedient servant,

A. McGILL,
Chief Analyst.

Date of Collection.	Nature of Sample.	No. of Sample.	Name and Address of Vendor.	Cost. Quantity.	Cost. Cents.	Name and Address of Manufacturer or Furnisher, as given by the Vendor.
			DISTRICT OF NOVA SCOTIA—			
1908.						
Aug. 5	Cider	33526	J. W. Livingstone, Windsor N.S.	3 pts.	60	Annapolis Valley Cider Co., Bridgetown, N.S.
" 6	"	33527	J. S. Creed, Halifax, N.S.	3 "	30	" "
" 6	"	33528	J. A. Crouse, Halifax, N.S.	3 "	30	Canadian Beverages' Co., Amherst, N.S.
" 6	"	33529	Jas. Roul, Halifax, N.S.	3 "	10	Vendor
" 8	"	33530	P. Connors, Halifax, N.S.	3 "	20	Annapolis Valley Cider Co., Bridgetown, N.S.
			DISTRICT OF ~~NEW BRUNSWICK~~ P.E.I.			
July 20	Cider	31301	James Kelly, Charlottetown.	3 pts.	20	Lennard Grant, agent, Charlottetown.
" 24	"	31302	P. A. Smith, Charlottetown.	3 "	20	Mills & Offices, Bridgetown, N.S.
" 30	"	31303	T. G. Jameson, Charlottetown.	3 "	50	Annapolis Valley Cider Co., Bridgetown, N.S.
Aug. 3	"	31304	J. A. Hynes, Kensington.	3 "	35	Canadian Beverage Co., Amherst, N.S.
" 4	"	31305	J. M. Noonan, Summerside.	3 "	30	G. E. Barbour Co., Ltd., St. John, N.B.
			DISTRICT OF ~~PRINCE EDWARD ISLAND~~ N.B.			
July 16	Cider	29733	W. A. Simonds, agent, 89 Union St., St. John, N.B.	3 bots.	30	Annapolis Valley Cider Co., Ltd., Bridgetown, N.S.
" 23	" (bulk)	29734	F. E. Williams Co., Ltd., St. John, N.B.	3 "	20	Belleville Vinegar and Cider Co., Belleville, Ont., Can.
" 25	" (bottled)	29735	Baird & Peters, St. John, N.B.	3 "	37	Annapolis Valley Cider Co., Ltd., Bridgetown, N.S.
Aug. 4	" "	29736	W. B. McKay & Co., Sussex, N.B.	3 "	60	" "
" 5	" (bulk)	29737	A. H. Hodge, Moncton, N.B.	3 pts.	15	Canadian Beverages' Co., Amherst, N.S.

* Calculated as citric.
S=Sp. grav. of dealcoholized residue solids p. c. = 245 (S—1), U.S. Bureau of Chemistry Bull. 118

CIDER.

Inspector's Report.	Specific Gravity of Cider.	Specific Gravity of Distillate.	Specific Gravity of Residue.	Results of Analysis.								Remarks and Opinion of the Chief Analyst.
				Alcohol as proof spirit—Volume.	Total Solids.*	Ash.	Acidity calculated as malic acid grm per 100 cc.	Polarization		Cane Sugar by Clerget.	Action with Fuller's Earth.	
								Direct.	Invert.			
R. J. WAUGH, INSPECTOR.												
	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	
.....	1·0302	0·9945	1·0356	6·84	8·72	0·15	0·72	— 8·5	— 8·8	None.	Colour light	
.....	1·0283	0·9942	1·0338	7·23	8·28	0·11	0·35	— 7·0	— 7·6	"	"	
Labelled Sparkling Anti. Rheumatic.	1·0281	0·9941	1·0334	7·36	8·18	0·27	0·82	—16·8	—17·0	"	"	
Sold as Apple Cider taken from bulk.	1·0285	0·9969	1·0312	3·85	7·54	0·02	0·52	— 0·2	— 0·2	"	"	
Sample drawn from bulk.	1·0010	0·9922	1·0085	2·86	2·08	0·22	0·59	— 1·0	— 1·1	"	"	
T. MOORE, INSPECTOR.												
.....	1·0019	0·9956	1·0064	5·49	1·57	0·16	0·44	— 1·5	— 1·5	None.	Colour light	
.....	0·9998	0·9937	1·0061	7·87	1·49	0.19	0·36	— 0 2	— 0·2	"	"	
Land of Evangeline Brand Pure Cider.	1·0317	0·9947	1·0369	6·58	8·94	0·07	0·63	— 8·8	— 8·9	"	No colour removed	
.....	1·0252	0·9979	1·0272	2·48	6·66	0·13	0·46	— 6·0	— 6·1	"	Colour light	Contains salicylic acid. Dyed with orange aniline dye.
This sample was sold as Orange Cider	1·0556	0·9975	1·0587	3·03	14·38	0·00	*0·97	—12·5	—13·9	"	95 p.c. colour removed	Orange cider Contains salicylic acid.
J. C. FERGUSON, INSPECTOR.												
Labelled Land of Evangeline Brand. Pure Cider.	1·0356	0·9953	1·0402	5·86	9·85	0·13	0·52	— 7·8	— 7·9	None.	Light colour	
Last year's stock. Purity & quality not guaranteed.	1·0063	0·9912	1·0155	11·21	3·80	0·30	0·75	+ 0·2	— 0·2	"	"	
Labelled Land of Evangeline Brand. Pure Cider.	1·0298	0·9948	1·0349	6·37	6·10	0·14	0·45	— 6·8	— 7·0	"	Colour light	
"	1·0314	0·9949	1·0350	6·34	8·67	0·18	0·46	— 8·0	— 8·6	0·10	"	
Last year's product, would not guarantee purity or quality.	1·0294	0·9950	1·0301	6·22	7·37	0·25	2·58	— 4·5	— 4·6	None.	"	Volatile acid as acetic= 2·00. Contains salicylic acid.

page 12.

Date of Collection.	Nature of Sample.	No. of Sample.	Name and Address of Vendor.	Cost. Quantity.	Cost. Cents.	Name and Address of Manufacturer or Furnisher, as given by the Vendor.
DISTRICT OF QUEBEC—						
July 16	Cidre Champagne.	26476	Juste Jean, Baie St. Paul...	3 bots..	39	Elzear Fortier, Quebec.....
" 24	Cider.....	26492	Joseph Falardeau, 271 Rue St. Joseph, Quebec.	3 pts...	15	Langlois & Paradis, Quebec.
" 27	Duffys Apple Juice.	26499	Myrand & Pouilot, 70 Rue de la Couronne, Quebec.	3 bots..	75	Laporte & Martin, Montreal.
" 27	Apple Cider....	26500	Charle. S. Riverin, 55 Rue de la Couronne, Quebec.	3 " ..	29	C. T. Oregan, Palace St., Quebec.
" 27	Cidre de Pomme	34401	R. Grenier, 128 Rue du Pont, Quebec.	3 " ..	25	Langlois & Paradis, Quebec.
DISTRICT OF ST. HYACINTHE—						
1908.						
July 29	Apple Cider....	160	J. H. Rocheleau, St. Pie, Bagot.	3 bots..	45	F. Kinsella, Montreal.....
Aug. 3	"	161	J. W. Turcotte, Drummondville.	3 " ..	45	Not known..... .....
" 5	"	162	J. H. Bryant, Sherbrooke...	3 " ..	free	S. Allan, Norwich, Ont.....
" 11	"	168	P. Paul, Sorel.....	5 " ..	25	N. Berard, Sorel... .....
DISTRICT OF MONTREAL—						
July 21	Cider	32621	Chas. Gurd & Co., Ltd., Jurors St., Montreal.	3 bots..	30	Vendors.....
" 21	"	32622	Robert Miller, 168 St. Maurice St., Montreal.	3 " ..	30	Vendor.....
" 21	"	32623	" " ..	3 " ..	30	" . ...

* S=Sp. grav. of dealcoholized residue solids p. c. = 245 (S—1), U.S. Bureau of Chemistry, Bull. 118

CIDER.

Inspector's Report.	Specific Gravity of Cider.	Specific Gravity of Distillate.	Specific Gravity of Residue.	Results of Analysis. Alcohol as proof spirit—Volume.	Total Solids.*	Ash.	Acidity calculated as malic acid grm. per 100 cc.	Polarisation Direct.	Polarisation Invert.	Cane Sugar by Clerget.	Action with Fuller's Earth.	Remarks and Opinion of the Chief Analyst.
E. BELAND, INSPECTOR.												
....	1·0441	0·9998	1·0447	None.	10·95	0·01	0·21	— 0·9	—10·4	1·84	90 p.c. colour removed	
... .	1·0125	0·9923	1·0301	9·72	4·92	0·32	0·75	+ 4·2	+ 4·2	None.	No colour removed	Contains benzoic ester.
.....	1·0512	0·9996	1·0514	None.	12·89	0·19	0·71	—18·2	—18·2	1·04	Colour light	
.....	1·0196	0·9922	1·0271	9·86	6·63	0·24	0·44	—15·0	—15·4	None.	"	
....	1·0084	0·9917	1·0117	10·54	2·86	0·29	0·81	+ 1·0	— 0·2	0·22	No colour removed	Contains salicylic acid.
J. C. ROULEAU, INSPECTOR.												
	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	
Jubilee Apple Cider.	1·0205	0·9919	1·0284	10·26	6·96	0·25	0·53	—17·6	—17·8	None.	Light colour	Smells strongly of acetic ester
Pure Apple Cider.	1·0106	0·9916	1·0186	10·67	4·55	0·16	0·53	— 7·0	— 7·2	"	"	
Labelled Sweet Apple Cider, Mfg. by S. Allen, Norwich, Ont., & bottled by J. H. Bryant, Sherbrooke, Que.	1·0205	0·9923	1·0284	9·72	6·96	0·28	0·51	—15·8	—15·9	"	No colour removed	
Labelled Nap. Berard, cidre de pommes, Sorel, Que.	1·0275	0·9998	1·0277	None.	6·78	0·00	0·39	— 2·5	— 5·5	0·56	"	Odor of acetic ester.
J. J. COSTIGAN, INSPECTOR.												
Labelled "Sparkling Apple Nectar."	1·0400	1·0000	1·0401	None.	9·82	0·00	0·23	— 9·6	— 9·6	None.	95 p.c. colour removed	
Labell'd "Genuine Sparkling Apple Cider."	1·0087	0·9928	1·0110	9·04	2·69	0·11	0·40	— 4·0	— 4·4	"	Colour light	
Labelled "Royal Windsor Champagne Cider."	1·0168	0·9998	1·0169	None.	4·14	0·01	0·22	— 1·2	— 3·2	0·37	95 p.c. colour removed	

page 12.

Date of Collection.	Nature of Sample.	No. of Sample.	Name and Address of Vendor.	Cost. Quantity.	Cost. Cents.	Name and Address of Manufacturer or Furnisher, as given by the Vendor.
			DISTRICT OF MONTREAL—			
July 22	"	32624	Rowan Bros. & Co., Ltd., Vallee St., Montreal.	3 " ..	30	Vendors.....
" 22	"	32625	Robt. Allan, Dorchester St., Montreal.	3 " ..	20	Vendor.....
			DISTRICT OF OTTAWA—			
July 27	Cider	22653	Bate & Co., Sparks St., Ottawa.	3 bots ..	35	Annapolis Valley Cider Co., Bridgetown, N.S.
Aug. 12	"	22654	Chevrier Bros., Cornwall, Ont.	1 qt	15	Allan, Norwich, Ont.....
			DISTRICT OF KINGSTON—			
July 20	Cider	35265	James Redden, Princess St., Kingston.	1 qt....	15	Whitby Fruit Vinegar Co., Whitby, Ont.
" 22	"	35266	Wallbridge & Clarke, Bridge St., Belleville.	3 bots ..	75	S. Allen, Norwich.....
" 22	"	35267	Belleville Fruit Vinegar, Belleville.	3 " ..	10	Belleville Fruit Vinegar Co., Belleville.
" 22	"	35268	S. Fourt, Port Hope	1 qt	15	S. Allen, Norwich.....
" 23	"	35269	Avid Knox, Queen St., Peterboro.	1 "	10	Vendor.....
			DISTRICT OF TORONTO—			
Aug. 5	Refined Cider...	35149	Opera Quick Lunch Counter, R. J. Gill, Prop., Hamilton.	3 pts...	15	S. Allen, Norwich.... . ...
" 8	Drinking " ..	35150	Whitby Fruit Vinegar Co., Whitby.	3 " ..	15	Vendors.... . .....

* S—Sp. grav. of dealcoholized residue. Solids p. c. =

CIDER.

Inspector's Report.	Specific Gravity of Cider.	Specific Gravity of Distillate.	Specific Gravity of Residue.	Results of Analysis.								Remarks and Opinion of the Chief Analyst.
				Alcohol as proof spirit—Volume.	Total Solids.*	Ash.	Acidity calculated as malic acid gms. per 100 c.c.	Polarisation		Cane Sugar by Clerget.	Action with Fuller's Earth.	
								Direct.	Invert.			
J. J. COSTIGAN, INSPECTOR—*Con.*												
Labelled "Sparkling flavoured Apple Nectar."	1·0295	0·9996	1·0296	"	7·75	0·00	0·14	— 0·4	— 5·4	0·93	90 p.c. colour removed	
Labelled "Sparkling Champagne Cider."	1·0225	0·9999	1·0227	"	5·56	0·01	0·20	+ 3·0	— 5·4	1·57	"	
J. A. RICKEY, INSPECTOR.												
Labelled "Land of Evangeline brand, Pure Cider."	1·0299	0·9947	1·0340	6·58	8·33	0·18	0·48	— 7·5	— 7·9	None.	Light colour	
Taken from bulk. Sold as Apple Cider.	1·0126	0·9951	1·0175	6·10	4·28	0·27	0·90	+ 4·5	+ 4·5	"	No colour removed	Contains benzoic ester.
JAS. HOGAN, INSPECTOR.												
....	1·0117	0·9943	1·0173	7·10	4·24	0·17	1·96	— 3·5	— 3·8	None.	Light colour	Volatile acid as acetic = 1·47. Contains salicylic acid.
.....	1·0200	0·9918	1·0270	10·40	6·83	0·37	0·56	—12·9	—13·1	"	"	
.....	1·0116	0·9915	1·0201	10·81	4·92	0·33	0·93	+ 1·5	— 0·2	0·32	.....	
... .	1·0025	0·9908	1·0117	10·81	2·86	0·20	0·69	— 2·2	— 2·4	None.	... .	
Two years in stock.	1·0094	0·9993	1·0097	None.	2·37	0·43	1·01	- 0·2	— 0·5	"	No colour removed	Volatile acid as acetic = 0·72.
H. J. DAGER, INSPECTOR.												
.. ..	1·0138	0·9910	1·0226	11·49	5·51	0·23	0·67	— 9·8	—10·4	0·10	No colour removed	
Vendor said sample was cured for drinking purposes, but had since gone hard; was using it for vinegar stock; had not sold any for drinking purposes for two months.	1·0136	0·9925	1·0202	9·04	4·95	0·26	0·56	+ 4·5	+ 4·5	None.	Colour light	Trace of salicylic acid

Date of Collection.	Nature of Sample.	No. of Sample.	Name and Address of Vendor.	Cost.		Name and Address of Manufacturer or Furnisher, as given by the Vendor.
				Quantity.	Cents.	
DISTRICT OF TORONTO—						
1920.						
Aug. 12	Refined " ..	35151	Kemp Beverage Co., Toronto.	3 " ..	15	S. Allen, Norwich ....
" 13	Apple " ..	35152	S. Patterson & Co., 318 Berkley St., Toronto.	3 " ..	15	Vendors ....
" 14	" " ..	35153	John Lorgo, 252 Queen St., Toronto.	3 " ..	15	S. Patterson & Co., 318 Berkley St., Toronto.
DISTRICT OF WINDSOR—						
Aug. 11	Cider	34587	A. Laddy, London	3 pts...	15	S. Allen, Norwich.....
DISTRICT OF MANITOBA—						
July 21	Cider	33177	Blackwood's, Ltd., Winnipeg.	3 bots..	30	Vendors ... .
" 21	"	33178	" " ..	3 " ..	25	" .....
" 22	"	33179	Pelissiers & Sons, Winnipeg.	3 pts...	30	" ....
" 23	"	33180	E. L. Drewry, Winnipeg....	3 " ..	Nil	MacNab & Roberts, Winnipeg.
" 24	"	33181	Ed. Foran, Notre Dame Av., Winnipeg.	3 bots..	45	E. L. Drewry, Winnipeg ...

* S=Sp. grav. of dealcoholized residue. Solids p.c.=245 (S—1) U.S. Bureau of Chemistry. Bull.

CIDER.

Inspector's Report.	Specific Gravity of Cider.	Specific Gravity of Distillate.	Sp. Gr. of Residue.	Results of Analysis.								Remarks and Opinion of the Chief Analyst.
				Alcohol as proof spirit—Volume.	Total Solids. *	Ash.	Acidity calculated as malic acid gms. per 100 cc.	Polarisation Direct.	Polarisation Invert.	Cane Sugar by Clerget.	Action with Fuller's Earth.	
H. J. DAGER, INSPECTOR—*Con.*												
	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	
.....	1·0147	0·9913	1·0234	11·06	5·73	0·20	0·66	−12·5	−12·6	"	"	
Sold as Apple Cider.	1·0233	0·9975	1·0264	3·03	6·22	0·03	0·50	− 0·3	− 1·3	0·20	"	Contains salicylic acid.
" ..	1·0244	0·9997	1·0248	None.	6·07	0·60	0·48	− 2·5	− 5·5	0·56	95 p.c. colour removed	
J. TALBOT, INSPECTOR.												
....	1·0326	0·9965	1·0359	4·40	8·79	0·13	0·50	− 7·8	− 7·9	None.	No colour removed	
A. C. LARIVIERE, INSPECTOR.												
Apple Cider, Finest Sparkling Double Filtered.	1·0197	0·9924	1·0267	9·56	6·54	0·20	0·43	−17·0	−17·6	None.	No colour removed	
Free from alcohol, possessing the full rich flavour of fresh fruit.	1·0330	0·9992	1·0343	0·93	8·40	0·07	†0·60	− 3·6	− 5·2	0·30	.....	Orange cider dyed with pink aniline dye, showing reaction for salicylic acid; considerable chlorides & sulphates present.
Apple Cider ..	*										.....	
" ..	1·0123	0·9917	1·0218	10·54	5·34	0·28	0·54	− 8·8	−10·4	0·30	Light colour	
The "Golden Key Brand," Orange Cider.	1·0617	0·9999	1·0622	None.	15·24	0·01	0·55	+ 7·6	−17·0	4·59	.....	Orange cider dyed with orange aniline dye contains salicylic acid; considerable chlorides and sulphates present.

118 page 12. †Calc. as citric. * Both samples broken.

Date of Collection.	Nature of Sample.	No. of Sample.	Name and Address of Vendor.	Cost. Quantity.	Cost. Cents.	Name and Address of Manufacturer or Furnisher, as given by the Vendor.
						DISTRICT OF CALGARY—
1928.						
Aug. 14	Cider	35311	Great West Liquor Co., Calgary.	3 pts.	30	S. Allen, Norwich, Ont.
" 14	"	35312	Calgary Wine & Spirit Co., Calgary.	3 "	1 00	Symons & Co., London, Eng.‡
" 14	"	35313	Macpherson Fruit Co., Calgary.	3 "	25	S. Allen, Norwich, Ont.
" 25	"	35314	Edmonton Wine & Spirit Co., Edmonton.	3 "	90	P. Saintier, Rouen, France.
" 25	"	35315	Little Gem Fruit Store, Edmonton.	3 "	25	S. Allen, Norwich, Ont.
						DISTRICT OF VANCOUVER—
July 29	Cider	34305	R. A. Crawford, 812 Pender St., Vancouver.	3 pts.	30	Thorpe & Co., Vancouver.
" 29	"	34306	Hughes Bros., 102 Hastings St., Vancouver.	3 "	40	Meikle Bros. & Co., Vancouver.
" 29	"	34307	A. Emmanuel, Hastings St., Vancouver.	3 "	30	Cross & Co., Vancouver
" 29	"	34308	Wells & Co., Pender St., Vancouver.	3 "	35	Wells & Co., Vancouver.
" 30	"	34309	Thorpe & Co., Beatty St., Vancouver.	3 "	15	W. J. Savory, Victoria, B.C.
						DISTRICT OF VICTORIA—
July 29	Cider (boiled)	34956	W. K. Houston & Co., Victoria.	3 bots.	60	F. Savory, Victoria.
" 23	" "	34963	West End Grocery Co., Ltd., Victoria.	3 "	75	Brady Houston Packing Co., Victoria.

† Both samples broken.

*S=Sp. grav. of dealcoholized residue solids p.c. 245 (S—1), U.S. Bureau of Chemistry, Bull. 118

CIDER.

Inspector's Report.	Specific Gravity of Cider.	Specific Gravity of Distillate.	Specific Gravity of Residue.	Results of Analysis.								Remarks and Opinion [of the Chief Analyst.
				Alcohol as proof spirit—Volume.	Total Solids.*	Ash.	Acidity calculated as malic acid gms. per 100 cc.	Polarization		Cane Sugar by Clerget.	Action with Fuller's Earth.	
								Direct.	Invert.			
R. W. FLETCHER, INSPECTOR.												
	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	
.....	1·0001	0·9906	1·0089	11·76	2·18	0·15	0·84	— 0·2	— 0·2	None.	Colour light	Volatile acid as acetic = 0·39.
.....	1·0067	0·9933	1·0135	3·36	3·31	0·19	0·78	— 2·5	— 2·7	"	No colour removed	Volatile acid as acetic = 0·40. Contains salicylic acid.
.....	†										.....	
.....	1·0196	0·9925	1·0271	9·45	6·68	0·13	0·62	— 5·2	— 5·3	"	No col'r removed	
.....	0·9987	0·9928	1·0055	9·04	1·35	0·19	0·41	— 0·2	— 0·5	"	Colour light	
J. F. POWER, INSPECTOR.												
.....	1·0235	0·9971	1·0271	3·58	6·63	0·08	0·82	— 0·5	— 4·1	0·67	.....	
Marked "Pure Apple Cider."	1·0108	0·9908	1·0197	11·76	4·82	0·22	0·65	— 5·0	— 5·3	None.	Colour light	Volatile acid as acetic = 0·37.
.....	1·0391	0·9971	1·0428	3·58	10·43	0·08	1·30	— 0·7	— 8·8	1·51	.....	
.....	1·0123	0·9920	1·0190	10·13	4·65	0·16	0·96	— 5·2	— 5·3	None.	Colour light	
.....	1·0180	0·9970	1·0205	3·71	5·02	0·06	0·64	— 1·8	— 1·8	"	50 p.c. colour removed	Contains salicylic acid.
D. O. SULLIVAN, INSPECTOR.												
"Pure Boiled Cider."	1·1961	0·9993	1·1966	0·81	48·16	0·39	1·12	+11·2	+ 6·8	0·83	.....	Total solids by drying grms. pr. 100 cc. = 51·28. Reducing sugar before inversion = 35·40. Reducing after inversion = 37·20
"	1·1993	0·9993	1·1996	0·81	48·90	0·46	1·12	— 8·4	+ 3·2	0·97	.....	Total solids by drying = 51·42. Reducing sugar before inversion = 37·06. Reducing sugar after inversion = 38·16

Date of Collection.	Nature of Sample.	No. of Sample.	Name and Address of Vendor.	Cost.		Name and Address of Manufacturer or Furnisher, as given by the Vendor.
				Quantity.	Cents.	
			DISTRICT OF VICTORIA—			
1908.						
July 23	Cider (boiled)...	34967	W. B. Hall, Victoria.....	3 bots..	75	Brady Houston Packing .Co, Victoria.
" 23	"	34971	Dixi H. Ross & Co., Victoria	3 " ..	60	" " ..
" 29	"	34973	W. K. Houston, Victoria...	3 " ..	55	F. Savory, Victoria.....

*S=Sp. grav. of dealcoholized residue solids p. c. = 245 (S—1), U.S. Bureau of Chemistry, Bull. 118 page 12.

CIDER.

Inspector's Report.	Specific Gravity of Cider.	Specific Gravity of Distillate.	Specific Gravity of Residue.	Results of Analysis.								Remarks and Opinion of the Chief Analyst.
				Alcohol as proof spirit—Volume.	Total Solids.	Ash.	Acidity calculated as malic acid gms. per 100 cc.	Polarization.		Cane Sugar by Clerget.	Action with Fuller's Earth.	
								Direct.	Invert.			
D. O. SULLIVAN, INSPECTOR—*Con.*												
	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	
"Pure Boiled Cider."	1·1982	0·9990	1·1985	1·16	48·63	0·43	1·11	+15·6	+ 4·4	2·17	.....	Total solids by drying = 51·17. Reducing sugar before inversion = 35·38 Reducing sugar after inversion = 36·84.
Ontario cider, vendor stated that cider was pure as far as he knew.	1·0076	0·9943	1·0035	7·10	15·57	0·16	1·36	—10·1	—10·2	None.	50 p.c. colour removed	Volatile acid as acetic = 0·91.
Champagne cider vendor said it was pure.	1·0490	0·9952	1·0557	5·99	13·64	0·16	1·52	—10·3	—10·3	"	80 p.c. colour removed	Volatile acid as acetic = 1·13.